Early IR Radiance (L1b) Evaluation

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Early level 1b evaluation will use

- **first light data at L+39 days**
- **first golden day data at L+66 days.**

•Evaluation will focus on

- **Radiometric Calibration**
- **Scan angle effects**
- **Spectral Calibration**
- **Spatial Calibration**
- **Noise evaluation**

hha 1 November 01	**Earth scene based IR level 1b evaluation between launch+2 and launch+5 months**	**Concept defined**	**Initial Prototype evaluation using simulated data documented**	**Data input requirements documented and availability verified**	**Sensitivity analysis documente ation complete**	**Macro ready for real data**		**Launch+ 3 months Report on first real data**	**Launch+ 5 months Report**
1. Radiometric Calibration									
	Evaluate during night time warm ocean using (bt2616 - Reynolds.surface.analysis) all scan angles	Hagan							
	Extremes test. For each channel look at 2% hottest and coldest BT's. Plot trend	McMillin							
	Radiance Covariance test. Verify that expected covariance agrees with observed.	McMillin							
	Reflectivity analysis to find channels effected by sun glint	McMillin							
	Radiance Covariance analysis	Strow							
	Low temperature radiometry verification using AMSU channels	Strow							
	Evaluate calibration artifacts at array boundaries viewing full footprint deep convective clouds	Aumann							
	Broadband radiometry comparisons using GOES imagers	Tobin							
	Eigenvector analysis of observed radiances to assess information content.	Goldberg							

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2. Scan angle dependent calibration accuracy									
	Evaluate (bt2616 - surface.analysis) as function of scan angle during night time warm ocean	Hagan							
	Mirror coating test using <210K scenes. Evaluate as function of scan angle.	McMillin							
	Demonstrate that there is less than 0.2K scan angle asymmetry, using upper tropospheric and stratospheric channels.	Aumann							
3. Spectral Calibration Verification									
	Use accurate RTA (correct frequency). Verify the level 1b provided frequency set is appropriate.	Strow							
	Use accurate RTA (correct frequency) with perturbed SRF's to verify that SRF's in orbit are the same as in RTA.	Strow							
	A simple spectral stability evaluation using channels straddling a line. Trend analysis of the difference.	McMillin							
3. Spatial Calibration Verification									
	Verify IR boresight using coastline crossings	Gregorich							

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5. Noise evaluation:									
	Verify level1b supplied noise estimates using using the statistics of adjacent footprint differences	Aumann	/hha/index.html						
	Noise evaluation using adjacent footprint difference under extended clear conditions (more than 2 footprints).	McMillin							
	Evaluate noise covariance and radiometric crosstalk.	McMillin							
	NeDT estimation using Earth scene data	Tobin							
	Evaluate noise covariance matrix using (ECMWF.calculated-observed).clear using fast RTA	Susskind							

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6. (calc-obs) Bias and stdev evaluation:									
	Evaluate (calculated.ECMWF - observed) for selected clear tropical ocean day and night. Evaluate bias as function of frequency, surface temperature, total moisture and scan angle. Evaluate st.dev relative to level 1b provided noise estimate Use exact RTA.	Strow							
	Evaluate (calculated.NCEP - observed) clear, night for tropical ocean night. Evaluate bias as function of frequency, surface temperature, total moisture and scan angle. Use fast RTA.								
	Develop simple (physical Pathfinder type) bias equation using (ECMWF.calculated - observed).clear using fast RTA	Susskind							
	Obs-calcs using ARM site and global radiosondes	Tobin							
	Monitor bias between observed radiances and radiances calculated from NCEP and ECMWF fields as a function of scan angle, latitude bands, day/nite, land type, etc.	Goldberg							

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7. Other tests:									
	Construct HIRS3 channel radiances from AIRS observations and evaluate using Pathfinder-like retrievals.	Susskind							
	Test clear detection algorithm that has been delivered to JPL (includes predicting 2616 from 8 and 11 micron channels,	Goldberg							
	Attempt first set of AIRS/AMSU retrievals using bias corrected radiances and a channel noise covariance matrix	Susskind							
	Derive first regression coefficients to see if NCEP model profiles can be derived from the radiances.	Goldberg							
	Verify that fixed N2O used for the RTA is appropriate	Strow							
Reference key	ftp://thunder.jpl.nasa.gov/hha/index.html	Aumann							